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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/063,788	05/13/2002	Yoshitami Sakaguchi	JP920010105US1	1629

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EXAMINER

ANYASO, UCHENDU O

ART UNIT	PAPER NUMBER
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2675

DATE MAILED: 07/09/2004

5

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/063,788

Applicant(s)

SAKAGUCHI ET AL.

Examiner

Uchendu O Anyaso

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 May 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☒ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. **Claims 1-18** are pending in this action.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. **Claims 10-17** are rejected under 35 U.S.C. 102(b) as being anticipated by *Mandl* (U.S. 6,597,371).

Regarding **claim 10-12**, Mandl teaches a reference pulse generation circuit for generating reference pulses corresponding to n-bit digital input data (column 5, lines 3-24), comprising: an n-bit binary counter (figure 5 at 108, 114) for counting up in synchronization with an input clock (figure 5 at 110); an n-1 bit latch (*see* figure 3 at 38') for generating signals by delaying high order n-1 bits output B (n-1) through B(1) from said binary counter by one input clock period (*see* figure 5 at 102, 120); and n-1 logical circuits (*see* figure 5 at 122, 124, 126) for performing logical operations with receiving as inputs said high order n-1 bits output B(n-1) through B(1) from said binary counter (figure 5 at 108, 114) and the delayed signals corresponding to the high order n-1 bits output B(n-1) through B(1) from said n-1 bit latch and obtaining outputs X(0) through X(n-2) with lower reference pulse densities, whereas output X(n-1) is obtained bypassing the logical circuit (*see* column 8, lines 11-35).

Regarding **independent claims 13, 15 and 17**, Mandl discloses how a reference pulse generation circuit for digital-analog conversion employing a pulse density modulation scheme (see column 3, lines 28-40, 55-67 through column 4, lines 6),

Furthermore, Mandl teaches a means for generating reference pulses that are exclusively in a high state corresponding to digital input data; and means for generating the reference pulses such that a number of switching times for pulse strings per time unit is constant for a predetermined range of said digital input data around a medium value by teaching how a digital display that uses pulse width modulated input video data would be designed to achieve a flickerless response wherein 15360 switches per second is needed for 60 fps (column 5, lines 3-10). Also, Mandl teaches the impact of the pulse density data stream on the display (fig. 2, column 5, lines 30-32).

Regarding **claim 14**, in further discussion of claim 13, Mandl teaches the reference pulses are generated with the frequency thereof being kept constant for half the whole range of said digital input data (column 5, lines 5-10).

Regarding **claim 16**, in further discussion of claim 15, Mandl teaches the step of reducing a maximum frequency of said pulse strings to less than half of that in the case where the number of switching times is not kept constant (column 5, lines 3-42).

Claim Rejections - 35 USC ' 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. **Claims 1-9** are rejected under 35 U.S.C. 103(a) as being unpatentable over *Yamazaki et al* (U.S. 6,335,716) in view of *Mandl* (U.S. 6,597,371).

Regarding **independent claims 1** and **4-6**, Yamazaki teaches a liquid crystal display comprising liquid crystal cells forming an image display on a substrate (column 3, lines 30-38; column 1, lines 9-18).

Furthermore, Yamazaki discloses a driver for applying a voltage to the liquid crystal cells based on a reference voltage for gamma correction corresponding to digital input data (see Abstract; column 3, lines 39-50).

However, Yamazaki does not teach how the driver keeps a number of switching times for pulse strings per time unit constant for a predetermined range of the digital input data when generating the pulse strings with pulse densities. On the other hand, Mandl teaches this concept by teaching how a digital display that uses pulse width modulated input video data would be designed to achieve a flickerless response wherein at 15360 switches per second is needed for 60 fps (column 5, lines 3-10). Also, Mandl teaches the impact of the pulse density data stream on the display (fig. 2, column 5, lines 30-32).

Thus, it would have been obvious to a person of ordinary skill in the art to combine Yamazaki and Mandl because while Yamazaki teaches a driver for applying a voltage to the

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liquid crystal cells based on a reference voltage for gamma correction corresponding to digital input data (see Abstract; column 3, lines 39-50), Mandl teaches how the driver keeps a number of switching times for pulse strings per time unit constant for a predetermined range of the digital input data (column 5, lines 3-10; fig. 2, column 5, lines 30-32). The motivation for combining these inventions would have been to achieve a flickerless display device (column 4, lines 60 through column 5, lines 12).

Regarding **claim 2**, in further discussion of claim 1, Yamazaki teaches how the driver would be mounted on the substrate (column 5, lines 61 through column 6, lines 10).

Regarding **claim 3**, in further discussion of claim 1, Mandl teaches how a digital display that uses pulse width modulated input video data would be designed to achieve a flickerless response wherein 15360 switches per second is needed for 60 fps (column 5, lines 3-10). Also, Mandl teaches the impact of the pulse density data stream on the display (fig. 2, column 5, lines 30-32).

Regarding **claim 7**, in further discussion of claim 6, Mandl teaches how pulse strings would be generated to output a voltage for gamma correction (column 4, lines 45-59).

Regarding **claims 8 and 9**, in further discussion of claim 7, Mandl teaches the components used to achieve his invention comprising adder circuits (122, 124, 126), counters (108, 114) (*see figure 5 at 108, 114, 122, 124, 126*).

6. **Claims 18** are rejected under 35 U.S.C. 103(a) as being unpatentable over *Mandl* (U.S. 6,597,371) in view of *Yamazaki et al* (U.S. 6,335,716).

Regarding **claim 18**, in further discussion of claim 17, Mandl does not teach the step of using the output analog voltage for a reference voltage for gamma correction in a source driver of a liquid crystal display. On the other hand, Yamazaki discloses a driver for applying a voltage to the liquid crystal cells based on a reference voltage for gamma correction corresponding to digital input data (see Abstract; column 3, lines 39-50).

Thus, it would have been obvious to a person of ordinary skill in the art to combine Mandl and Yamazaki because while Mandl teaches a reference pulse generation circuit for digital-analog conversion employing a pulse density modulation scheme (see column 3, lines 28-40, 55-67 through column 4, lines 6), Yamazaki discloses a driver for applying a voltage to the liquid crystal cells based on a reference voltage for gamma correction corresponding to digital input data (see Abstract; column 3, lines 39-50). The motivation for combining these inventions would have been to achieve a gamma correcting system of a semiconductor display device (column 3, lines 39-50).

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

U.S. Patent 5,929,835 to *Sakamoto* for a tone correcting system for a display.

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Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Uchendu O. Anyaso whose telephone number is (703) 306-5934. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steve Saras, can be reached at (703) 305-9720.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks

Washington, D.C. 20231

or faxed to:

(703) 872-9314 (for Technology Center 2600 only)

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington, VA, Sixth Floor (Receptionist). Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 Customer Service Office whose telephone number is (703) 306-0377.



Uchendu O. Anyaso

06/26/2004



CHANH NGUYEN
PRIMARY EXAMINER